

WHAT IS CLAIMED IS:

1. A magnetic resonance imaging apparatus comprising:
a static magnetic field generating unit that generates a static magnetic field of a constant magnetic field intensity;
an gradient magnetic field generating unit that generates a magnetic field strength gradient;
a high-frequency magnetic field generating unit;
a detecting unit that detects nuclear magnetic resonance signals generated from an object to be examined; and
a display unit that displays a result of the detection, wherein the magnetic resonance imaging apparatus further comprises:
a magnetic field correcting unit that generates an additional magnetic field for making uniform a space distribution of the static magnetic field;
a temperature detecting unit that detects a temperature of the static magnetic field generating unit and/or surroundings thereof; and
a control unit that controls the magnetic field correcting unit based on the temperature detected by the temperature-detecting unit.

2. A magnetic resonance imaging apparatus according to claim 1, wherein the control unit has a temperature setting unit that sets a temperature detected by the temperature-detecting unit.

3. A magnetic resonance imaging apparatus according to claim 1, wherein the temperature detecting unit detects temperatures of at least two positions.

4. A magnetic resonance imaging apparatus according to claim 1, wherein the magnetic field correcting unit comprises a shim coil for generating an additional magnetic field and a shim power

source that supplies a current to the shim coil.

5. A magnetic resonance imaging apparatus according to claim 1, wherein the control unit comprises a voltage generating unit that generates a voltage corresponding to an ununiformity component of the magnetic field at the temperature detected by the temperature detecting unit, a voltage/current converter that converts the voltage output by the voltage generating unit to current, and a supplying unit that supplies to the magnetic field correcting unit the current generated from the voltage/current converter.

6. A magnetic resonance imaging apparatus according to claim 1, wherein the magnetic field correcting unit generates at least one additional magnetic field of linear term of y , quadratic term of z and quartic term of z , where z is the direction of the static magnetic field and y is one direction orthogonal to z .

7. A magnetic resonance imaging apparatus according to claim 1, wherein the temperature detecting unit is disposed near the static magnetic field generating unit and/or in a room where the static magnetic field generating unit is placed.

8. A method of maintaining a static magnetic field generated by a static magnetic field generating unit uniform in a magnetic resonance imaging apparatus, by generating an additional magnetic field, the method comprising the steps of:

calculating a temperature dependence of an ununiform component of a space distribution of the static magnetic field;

detecting a temperature of the static magnetic field generating unit; and

calculating a strength of the additional magnetic field based on the detected temperature and the temperature dependence.

9. A method according to claim 8, wherein steps from the temperature detection to the generation

of the additional magnetic field are conducted at all times.

10. A method according to claim 8,

wherein steps from the temperature detection to the generation of the additional magnetic field are conducted at predetermined time intervals.

11. A method according to claim 8 further comprises the steps of:
measuring NMR signals generated from an object to be examined;
calculating a magnetic field error component attributable to
the object using the measured NMR signals;

calculating a strength of the additional magnetic field based on the error component attributable to the object; and

generating an additional magnetic field having an intensity equal to that of the sum of that obtained based on the detected temperature and the temperature dependence and that calculated based on the error component.

12. A method according to claim 8,

wherein the additional magnetic field is at least one magnetic field of linear term of y , quadratic term of z and quartic term of z , where z is the direction of the static magnetic field and y is one direction orthogonal to z .

13. A magnetic resonance imaging apparatus comprising:

a static magnetic field generating means that generates a static magnetic field of a constant magnetic field intensity, and

a uniformity correcting means that detects a temperature change affecting the uniformity of the magnetic field generated by the static magnetic field generating means and generates a magnetic field for canceling a change of the magnetic field intensity due to a temperature change based on the detected temperature change.

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